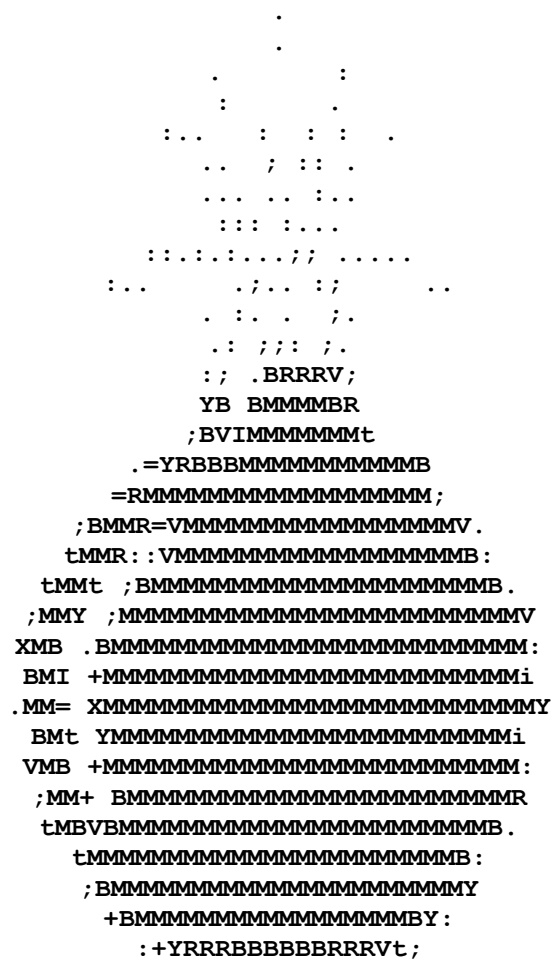
# BUILDING CAPACITY



*A RECIPE ZINE*

*Zine-makers' introduction:*

We present to you a tool for the days we are in and the days to come, refined and put into zine format from the US Army technical manual TM 31-210, the Improvised Munitions Handbook.

We recommend that you read through the instructions before attempting to follow them, and do not attempt them until you fully understand them.

We recommend that you learn what you need to learn, memorize it, if needed write down ratios and measurements in a way that is not incriminating, and discard of this zine as soon as possible.

The goal is for our community to be able to match what the state can throw at us. We produced this zine towards that aim.

The contents of this zine are serious. The tools enclosed are not like the tools we are used to using. Take care with these. A mistake or careless use can lead to innocent people getting hurt.

And if this zine makes its way into the hands of anyone who is unconcerned with innocent people getting hurt, or intends to get innocent people hurt – let it be known that we have more experience with these tools than you, and we will stand in your way.

Towards a new world, and liberation.

*-Southwest Philly Acorn Sab Group*

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*All following text ripped directly from TM 31-210 unless otherwise stated*

## Section 0 Introduction

### 0.1 Purpose and Scope

In Unconventional Warfare operations it may be impossible or unwise to use conventional military munitions as tools in the conduct of certain missions. It may be necessary instead to fabricate the required munitions from locally available or unassuming materials. The purpose of this manual is to increase the potential of Special Forces and guerrilla troops by describing in detail the manufacture of munitions from seemingly innocuous locally available materials.

Manufactured, precision devices almost always will be more effective, more reliable, and easier to use than improvised ones, but shelf items will just not be available for certain operations for security or logistical reasons. Therefore the operator will have to rely on materials he can buy in a drug or paint store, find in a junk pile, or scrounge from military stocks. Also, many of the ingredients and materials used in fabricating homemade items are so commonplace or innocuous they can be carried without arousing suspicion. The completed item itself often is more easily concealed or camouflaged. In addition, the field expedient item can be tailored for the intended target, thereby providing an advantage over the standard item in flexibility and versatility.

The manual contains simple explanations and illustrations to permit construction of the items by personnel not normally familiar with making and handling munitions. These items were conceived in-house or, obtained from other publications or personnel engaged in munitions or special warfare work. This manual includes methods for fabricating explosives, detonators, propellants, shaped charges, small arms, mortars, incendiaries, delays, switches, and similar items from indigenous materials.

### 0.2 Safety and Reliability

Each item was evaluated both theoretically and experimentally to assure safety and reliability. A large number of items were discarded because of inherent hazards or unreliable performance. Safety warnings are prominently inserted in the procedures where they apply but it is emphasized that safety is a matter of attitude. It is a proven fact that men who are alert, who think out a situation, and who take correct precautions have fewer accidents than the careless and indifferent. It is important that work be planned and that instructions be followed to the letter; all work should be done in a neat and orderly manner. In the manufacture of explosives, detonators, propellants and incendiaries, equipment must be kept clean and such energy concentrations as sparks, friction, impact, hot objects, flame, chemical reactions, and excessive pressure should be avoided.

These items were found to be effective in most environments; however, samples should be made and tested remotely prior to actual use to assure proper performance. Chemical items should be used as soon as possible after preparation and kept free of moisture, dirt, and the above energy concentrations. Special care should be taken in any attempt at substitution or use of items for purposes other than that specified or intended.

## Section 1

Explosives and Propellants (including igniters)

### 1.1 Plastic Explosive Filler

A plastic explosive filler can be made from potassium chlorate and petroleum jelly. This explosive can be detonated with commercial #8 or any military blasting cap.

| Materials Required | How Used |
|---|---|
| Potassium chlorate | Medicine<br>Manufacture of matches |
| Petroleum jelly (Vaseline) | Medicine<br>Lubricant |
| Piece of round stick | |
| Wide bowl or other container for mixing ingredients | |

Procedure

1-- Spread potassium chlorate crystals thinly on a hard surface. Roll the round stick over crystals to crush into a very fine powder until it looks like face powder or wheat flour.

2-- Place 9 parts powdered potassium chlorate and 1 part petroleum jelly in a wide bowl or similar container. Mix ingredients with hands (knead) until a uniform paste is obtained.

| |
|---|
| **Note:** Store explosive in a waterproof container until ready to use. |

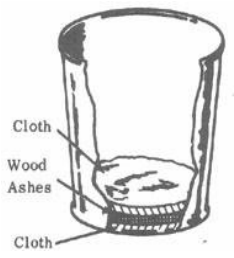
### 1.2 Potassium Nitrate

Potassium nitrate (saltpeter) can be extracted from many natural sources and can be used to make nitric acid, black powder and many pyrotechnics. The yield ranges from 0.1 to 10% by weight, depending on the fertility of the soil.

| Materials | Source |
|---|---|
| Nitrate bearing earth or other material, about 3-1/2 gallons (13-1/2 liters) | Soil containing old decayed vegetable or animal matter<br>Old cellars and/or farm dirt floors<br>Earth from old burial grounds<br>Decayed stone or mortar building foundations |
| Fine wood ashes, about 1/2 cup (1/8 liter) | Totally burned whitish wood ash powder<br>Totally burned paper (black) |
| Bucket or similar container, about 5 gallons (19 liters) in volume (plastic, metal, or wood) | |
| 2 pieces of finely woven cloth, each slightly larger than bottom of bucket | |
| Shallow pan or dish, at least as large as bottom of bucket | |
| Shallow heat resistant container (ceramic, metal, etc.) | |
| Water – 1-3/4 gallons (6-3/4 liters) | |
| Awl, knife, screwdriver, or other hole producing instrument | |
| Alcohol about 1 gallon (4 liters) (whiskey, rubbing alcohol, etc.) | |
| Heat source (fire, electric heater, etc.) | |
| Paper | |
| Tape | |

Note: Only the ratios of the amounts of ingredients are important. Thus, for twice as much potassium nitrate, double quantities used.

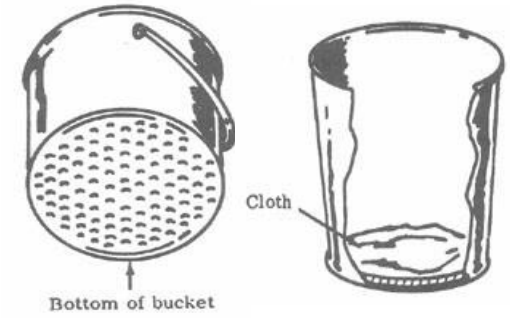
Procedure



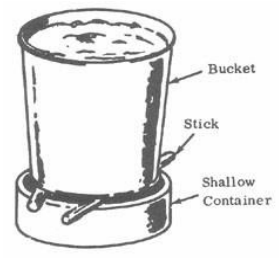

1. Punch holes in bottom of bucket. Spread one piece of cloth over holes inside of bucket.

2-- Place wood ashes on cloth and spread to make a layer about the thickness of the cloth. Place second piece of cloth on top of ashes.

3-- Place dirt in bucket.



4-- Place bucket over shallow container. Bucket may be a ported on sticks if necessary.

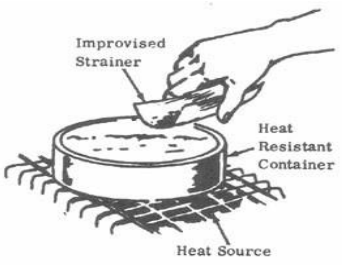



5-- Boil water and pour it over earth in bucket a little at a time. Allow water to run through holes in bucket into shallow container. Be sure water goes through all of the earth. Allow drained liquid to cool and settle for 1 to 2 hours.

Note: Do not pour all of the water at once, since this may cause stoppage.

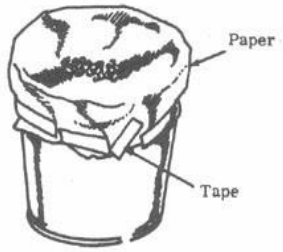
6-- Carefully drain off liquid into heat resistant container. Discard any sludge remaining in bottom of the shallow container.

7--Boil mixture over hot fire for at least 2 hours. Small grains of salt will begin to appear in the solution. Scoop these out as they form, using any type of improvised strainer (paper, etc.).




8--When liquid has boiled down to approximately half its original volume, remove from fire and let sit. After half an hour add an equal volume of alcohol. When mixture is poured through paper, small white crystals will collect on top of it.

9--To purify the potassium nitrate, redissolve the dry crystals in the smallest possible amount of boiled water. Remove any salt crystals that appear (step 7); pour through an improvised filter made of several pieces of paper and evaporate or gently heat the concentrated solution to dryness.




10--Spread crystals on flat surface and allow to dry. The potassium nitrate crystals are now ready for use.

### 1.3 Improvised Black Powder

Black powder can be prepared in a simple, safe manner. It may be used as blasting or gun powder.

| Materials Required |
| --- |
| Potassium nitrate, granulated, 3 cups (3/4 liter) ( section 1.2) |
| Wood charcoal, powdered, 2 cups (1/2 liter) |
| Sulfur, powdered, 1/2 cup (1/8 liter) |
| Alcohol, 5 pints (2-1/2 liters) (whiskey, rubbing alcohol, etc.) |
| Water, 3 cups (3/4 liter) |
| Heat source |
| 2 Buckets – each 2 gallon (7-1/2 liters) capacity, at least one of which is heat resistant (metal, ceramic, etc.) |
| Flat window screening, at least 1 foot (30 cm) square |
| Large wooden stick |
| Cloth, at least 2 feet (60 cm) square |

Note: The above amounts will yield two pounds (900 grams) of black powder. However, only the ratios of the amounts of ingredients are important. Thus, for twice as much black powder, double all quantities used.

Procedure

1--Place alcohol in one of the buckets.

2--Place potassium nitrate, charcoal, and sulfur in the heat resistant bucket. Add 1 cup water and mix thoroughly with wooden stick until all ingredients are dissolved.

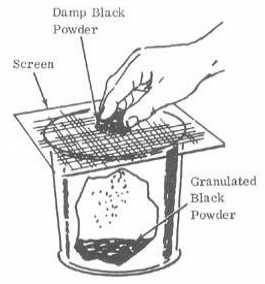
3--Add remaining water (2 cups) to mixture. Place bucket on heat source and stir until small bubbles begin to form.

**Caution:** Do not boil mixture. Be sure *all* mixture stays wet. If any is dry, as on sides of pan, it may ignite.

4-- Remove bucket from heat and pour mixture into alcohol while stirring vigorously.

5--Let alcohol mixture stand about 5 minutes. Strain mixture through cloth to obtain black powder. Discard liquid. Wrap cloth around black powder and squeeze to remove all excess liquid.

6--Place screening over dry bucket. Place workable amount of damp powder on screen and granulate by rubbing solid through screen.




Note: If granulated particles appear to stick together and change shape, recombine entire batch of powder and repeat steps 5 and 6.

7--Spread granulated black powder on flat dry surface so that layer about 1/2 inch (1-1/4 cm) is formed. Allow to dry. Use radiator, or direct sunlight. This should be dried as soon as possible, preferably in one hour. The longer the drying period, the less effective the black powder.

**Caution:** Remove from heat *as soon as* granules are dry. Black powder is now ready for use.

### 1.6 Fertilizer Explosive

An explosive munition can be made from fertilizer grade ammonium nitrate and either fuel oil or a mixture of equal parts of motor oil and gasoline. When properly prepared, this explosive munition can be detonated with a blasting cap.

| **Materials Required** |
|---|
| Ammonium nitrate (not less than 32% nitrogen) |
| Fuel oil or gasoline and motor oil 1:1 ratio) |
| Two flat boards. (At least one of these should be comfortably held in the hand, i.e. 2 x 4 and 36 x |
| Bucket or other container for mixing ingredients |
| Iron or steel pipe or bottle, tin can or heavy-walled cardboard tube |
| Blasting cap |
| Wooden rod – 1/4 inch diameter |
| Spoon or similar measuring container |

Procedure

Spread a handful of the ammonium nitrate on the large flat board and rub vigorously with the other board until the large particles are crushed into a very fine powder that looks like flour (approximately 10 minutes).

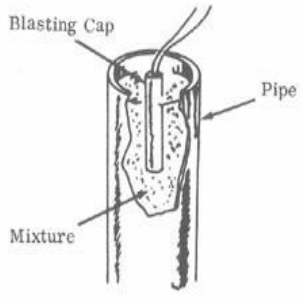
Note: Proceed with step 2 as soon as possible since the powder may take moisture from the air and become spoiled.

Mix one measure (cup, tablespoon, etc.) of fuel oil with 16 measures of the finely ground ammonium nitrate in a dry bucket or other suitable container and stir with the wooden rod. If fuel oil is not available, use one half measure of gasoline and one half measure of motor oil. Store in a waterproof container until ready to use.

Spoon this mixture into an iron or steel pipe which has an end cap threaded on one end. If a pipe is not available, you may use a dry tin can, a glass jar or a heavy-walled cardboard tube.

Note: Take care not to tamp or shake the mixture in the pipe. If mixture becomes tightly packed, one cap will not be sufficient to initiate the explosive.

Insert blasting cap just beneath the surface of the explosive mix.




Note: Confining the open end of the container will add to the effectiveness of the explosive.

**1.7 Carbon Tet – Explosive**

A moist explosive mixture can be made from fine aluminum powder combined with carbon tetrachloride or tetrachloroethylene. This explosive can be detonated with a blasting cap.

| Materials Required | Source |
|---|---|
| Fine aluminum bronzing powder | Paint Store |
| Carbon tetrachloride, or<br>tetrachloroethylene | Pharmacy, or fire extinguisher fluid<br>Dry cleaners, Pharmacy |
| Stirring rod (wood) | |
| Mixing container (bowl, bucket, etc.) | |
| Measuring container (cup, tablespoon, etc.) | |
| Storage container (jar, can, etc.) | |
| Blasting cap | |
| Pipe, can or jar | |

Procedure

1.-- Measure out two parts aluminum powder to one part carbon tetrachloride or tetrachloroethylene liquid into mixing container, adding liquid to powder while stirring with the wooden rod.

2.--Stir until the mixture becomes the consistency of honey syrup.

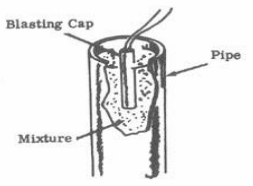
3. Store explosive in a jar or similar water proof container until ready to use. The liquid in the mixture evaporates quickly when not confined.

Note: Mixture will detonate in this manner for a period of 72 hours.

How to Use: Pour this mixture into an iron or steel pipe which has an end cap threaded on one end. If a pipe is not available, you may use a dry tin can or a glass jar.

Insert blasting cap just beneath the surface of the explosive mix.

Note: Confining the open end of the container will add to the effectiveness of the explosive.



**1.8 Fertilizer AN-Al Explosive**

A dry explosive mixture can be made from ammonium nitrate fertilizer combined with fine aluminum powder. This explosive can be detonated with a blasting cap.

| Materials Required | Source |
|---|---|
| Ammonium nitrate fertilizer (not less than 32% nitrogen) | Farm or Feed Store (*Zine maker's note: suspicious fertilizer purchases are closely monitored. You should assume that any fertilizer purchase you make has been documented. They really do pay attention to this stuff. Be careful.)* |
| Fine aluminum bronzing powder | Paint Store |
| Measuring container (cup, tablespoon, etc.) | |
| Mixing container (wide bowl, can, etc.) | |
| Two flat boards (one should be comfortably held in hand and one very large, i.e. 2 x 4 and 36 x 36 inches) | |
| Storage container (jar, can, etc.) | |
| Blasting cap | |
| Wooden rod – 1/4 inch diameter | |
| Pipe, can or jar | |

Procedure: Method I – To Obtain a Low Velocity Explosive

Use measuring container to measure four parts fertilizer to one part aluminum powder and pour into the mixing container. (Example: 4 cups of fertilizer to 1 cup aluminum powder.)

Mix ingredients well with the wooden rod.

Method II – To Obtain a Much Higher Velocity Explosive

Spread a handful at a time of the fertilizer on the large flat board and rub vigorously with the other board until the large particles are crushed into a very fine powder that looks like flour (approximately 10 minutes per handful).

Note: Proceed with step b below as soon as possible since the powder may take moisture from the air and become spoiled. Follow steps a and b of Method I.

Store the explosive mixture in a waterproof container, such as glass jar, steel pipe, etc., until ready to use.

How to Use

Follow steps 1 and 2 of How to Use in section 1.7.

### 1.10 Nitric Acid/Nitrobenzene ("Hellhoffite") Explosive

An explosive munition can be made from mononitrobenzene and nitric acid. It is a simple explosive to prepare. Just pour the mononitrobenzene into the acid and stir.

| Materials Required | Source |
|---|---|
| Nitric acid | Field grade or 90% concentrated (specific gravity of 1.48) |
| Mononitrobenzene (also known as nitrobenzene) | Drug store (oil of mirbane)<br>Chemical supply house<br>Industries (used as solvent) |
| Acid resistant measuring containers | Glass, clay, etc. |
| Acid resistant mixing rod | |
| Blasting cap | |
| Wax | |
| Steel pipe, end cap and tape | |
| Bottle or jar | |

**Note:** Prepare mixture just before use.

Procedure

1.-- Add 1 volume (cup, quart, etc.) mononitrobenzene to 2 volumes nitric acid in bottle or jar.

2.-- Mix ingredients well by stirring with acid resistant rod.

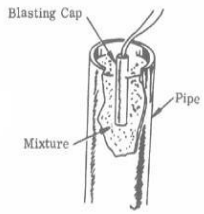
How to Use

Wax blasting cap, pipe and end cap.

Thread end cap onto pipe.

Pour mixture into pipe.

Insert and tape blasting cap just beneath surface of mixture.




Note: Combining the open end of the pipe will add to the effectiveness of the explosive.

### 1.11 Optimized Process for Cellulose/Acid Explosives

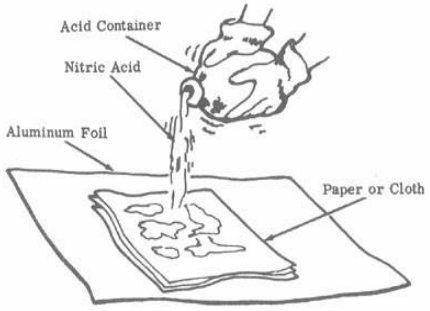
An acid type explosive can be made from nitric acid and white paper or cotton cloth. This explosive can be detonated with a commercial #8 or any military blasting cap.

| Materials Required | Source |
|---|---|
| Nitric Acid | Industrial metal processors, 90% concentrated (specific gravity of 1.48)<br>Field grade (section 1.4) |
| White unprinted, unsized paper | Paper towels, napkins |
| Clean white cotton cloth | Clothing, sheets, etc. |
| Acid resistant container | Wax coated pipe or can, ceramic pipe, glass jar, etc.<br>Heavy-walled glass containers |
| Aluminum foil or acid resistant material | Food stores |
| Protective gloves | |
| Blasting cap | |
| Wax | |

Procedure

1--Put on gloves.

2--Spread out a layer of paper or cloth on aluminum foil and sprinkle with nitric acid until thoroughly soaked. If aluminum foil is unavailable, use an acid resistant material (glass, ceramic or wood).




**Caution:** Acid will burn skin and destroy clothing. If any is spilled, wash it away with a large quantity of water. Do not inhale fumes.

3--Place another layer of paper or cloth on top of the acid-soaked sheet and repeat step 2 above. Repeat as often as necessary.

4-- Roll up the aluminum foil containing the acid-soaked sheets and insert the roll into the acid resistant container.

Note: If glass, ceramic or wooden tray is used, pick up sheets with two wooden sticks and load into container.

5--Wax the blasting cap.

6--Insert the blasting cap in the center of the rolled sheets. Allow 5 minutes before detonating the explosive.

### 1.12 Methyl Nitrate Dynamite

A moist explosive mixture can be made from sulfuric acid, nitric acid and methyl alcohol. This explosive can be detonated with a blasting cap.

| Materials Required | Source |
|---|---|
| Sulfuric acid | Clear battery acid boiled until white fumes appear |
| Nitric acid | Field grade nitric acid ( section 1.4) or 90% concentration (1.48 specific gravity ) |
| Methyl alcohol | Methanol<br>Wood alcohol (not denatured alcohol)<br>Antifreeze (nonpermanent) |
| Eyedropper or syringe with glass tube | |
| Large diameter glass (2 quart) jar | |
| Narrow glass jars (1 quart) | |
| Absorbent (*e.g.* fine sawdust, shredded pape shredded cloth) | |
| Cup | |
| Pan (3 to 5 gallon) | |
| Teaspoon | |
| Wooden stick | |
| Steel pipe with end cap | |
| Blasting cap | |
| Water | |
| Tray | |

Procedure

1--Add 24 teaspoons of sulfuric acid to 16-1/2 teaspoons of nitric acid in the 2 quart jar

> **Caution:** Acid will burn skin and destroy clothing. If any is spilled, wash it away with a large quantity of water. Do not inhale fumes.

2. Place the jar in the pan (3 to 5 gallon) filled with cold water or a stream and allow acid to cool.

3-- Rapidly swirl the jar to create a whirlpool in the liquid (without splashing) while keeping the bottom portion of the jar in the water.

4-- While continually swirling, add to mixture, 1/2 teaspoon at a time, 13-1/2 teaspoons of methyl alcohol, allowing mixture to cool at least one minute between additions.

**Caution:** If there is a sudden increase in the amount of fumes produced or if the solution suddenly turns much darker or begins to froth, dump solution in the water *within 10 seconds*. This will halt the reaction and prevent an accident.

5--After the final addition of methyl alcohol, swirl for another 30 to 45 seconds.

6--Carefully pour the solution into one of the narrow glass jars. Allow jar to stand in water for approximately 5 minutes until two layers separate.

7--With an eyedropper or syringe, remove top layer and carefully put into another narrow glass jar. This liquid is the explosive.

**Caution:** Explosive is shock sensitive.

8--Add an equal quantity of water to the explosive and swirl. Allow mixture to separate again as in step 6. The explosive is now the bottom layer.

9--Carefully remove the top layer with the eyedropper or syringe and discard.

10--Place one firmly packed cup of absorbent in the tray.

11--While stirring with the wooden stick, slowly add explosive until the mass is very damp but not wet enough to drip. Explosive is ready to use.

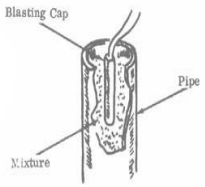
Note: If mixture becomes too wet, add more absorbent.

If storage of explosive is required, store in a sealed container to prevent evaporation.

**Caution:** Do not handle liquid explosive or allow to contact skin. If this happens, flush away immediately with large quantity of water. Keep grit, sand or dirt out of mixture.

How to Use

1--Spoon this mixture into an iron or steel pipe which has an end cap threaded on one end. If a pipe is not available, you may use a dry tin can or a glass jar.




2--Insert blasting cap just beneath the surface of the explosive mix

Note: Confining the open end of the container will add to the effectiveness of the explosive.

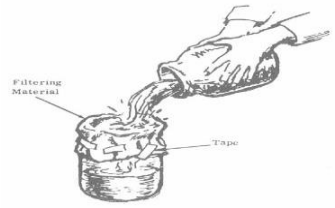
### 1.13 Urea Nitrate Explosive

Urea nitrate can be used as an explosive munition. It is easy to prepare from nitric acid and urine. It can be detonated with a blasting cap.

| Materials Required | Source |
|---|---|
| Nitric acid, 90% concentration (1.48 specific gravity) | Field grade (section 1.4) or industrial metal processors |
| Urine | Animals (including humans) |
| 2 one gallon heat and acid-resistant containers (glass, clay, etc.) | |
| Filtering material | Paper towel or finely textured cotton cloth (shirt, sheet, etc.) |
| Aluminum powder (optional or if available) | Paint stores |
| Heat source | |
| Measuring containers (cup and spoon) | |
| Water | |
| Tape | |
| Blasting cap | |
| Steel pipe and end cap(s) | |

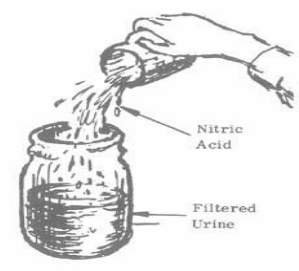
**Note:** Prepare mixture just before use.

Procedure




1--Boil a large quantity of urine (10 cups) to approximately 1/10 its volume (1 cup) in one of the containers over the heat source.

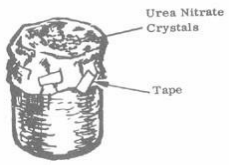
2--Filter the urine into the other container through the filtering material to remove impurities.




3-- Slowly add 1/3 cup of nitric acid to the filtered urine, and let mixture stand for 1 hour.

> Caution: Acid will burn skin and destroy clothing. If any is spilled wash it away with a large quantity of water. Do not inhale fumes.

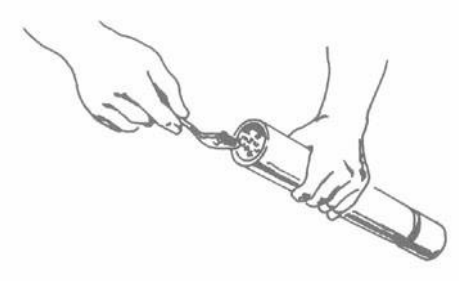
4.--Filter mixture as in step 2. Urea nitrate crystals will collect on the paper.




5--Wash the urea nitrate by pouring water over it.

6--Remove urea nitrate crystals from the filtering material and allow to dry thoroughly (approximately 16 hours).

Note: The drying time can be reduced to two hours if a hot (not boiling) water bath is used. See step 5 of section 1.15.



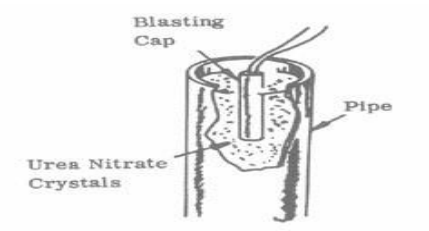
How to Use

Spoon the urea nitrate crystals into an iron or steel pipe which has an end cap threaded on one end.

Insert blasting cap just beneath the surface of the urea nitrate crystals.

Notes: This explosive can be made more effective by mixing with aluminum powder (can be obtained in paint stores) in the ratio of 4 to 1. For example, mix 1 cup of aluminum powder with 4 cups of urea nitrate.

Confining the open end of the container will add to the effectiveness of the explosive.

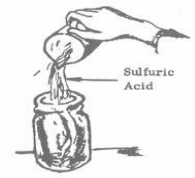


### 1.14 Preparation of Copper Sulfate (Pentahydrate)

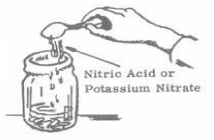
Copper sulfate is a required material for the preparation of TACC (section 1.16).

| Materials Required |
|---|
| Pieces of copper or copper wire |
| Dilute sulfuric acid (battery acid) |
| Potassium nitrate (section 1.2) or nitric acid, 90% concentration (1.48 specific gravity) (section 1.4) |
| Alcohol |
| Water |
| Two 1 pint jars or glasses, heat resistant |
| Paper towels |
| Pan |
| Wooden rod or stick |
| Improvised scale (section 7.8) |
| Cup |
| Container |
| Heat source |
| Teaspoon |

Procedure

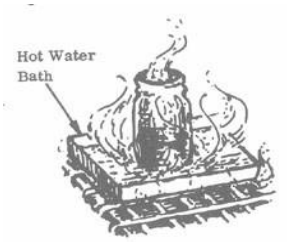



1--Place 10 grams of copper pieces into one of the pint jars. Add 1 cup (240 milliliters) of dilute sulfuric acid to the copper.



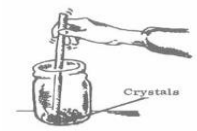

2--Add 12 grams of potassium nitrate or 1-1/2 teaspoons of nitric acid to the mixture. Note: Nitric acid gives a product of greater purity.

3-- Heat the mixture in a pan of simmering hot water bath until the bubbling has ceased (approximately 2 hours). The mixture will turn to a blue color.




**Caution:** The above procedure will cause strong toxic fumes. Perform step 3 in an open, well ventilated area.

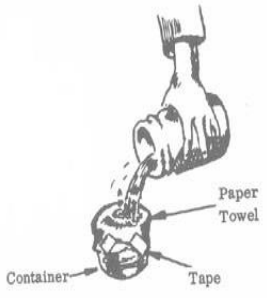
4--Pour the hot blue solution, but not the copper, into the other pint jar. Allow solution to cool at room temperature. Crystals will form at the bottom of the jar. Discard the unreacted copper pieces in the first jar.




5--Carefully pour away the liquid from the crystals. Crush crystals into a powder with wooden rod or stick.

6--Add 1/2 cup (120 milliliters) of alcohol to the powder while stirring.

7--Filter the solution through a paper towel into a container to collect the crystals. Wash the crystals left on the paper towel three times, using 1/2 cup (120 milliliters) portions of alcohol each time.




8-- Air dry the copper sulfate crystals for 2 hours.

Note: Drying time can be reduced to 1/2 hour by use of hot, not boiling, water bath (see step 3).

### 1.16 TACC (Tetramminecopper (II) Chlorate)

Tetramminecopper (II) chlorate is a primary explosive that can be made from sodium chlorate, copper sulfate and ammonia. This explosive is to be used with a booster explosive such as picric acid (section 1.21) or RDX in the fabrication of detonators (section 6.13).

| Materials Required | Source |
|---|---|
| Sodium chlorate | Section 1.23<br>Medicine<br>Weed killer, hardware store |
| Copper sulfate | Section 1.14<br>Insecticide, hardware store<br>Water purifying agent |
| Ammonia hydroxide | Household ammonia<br>Smelling salts |

| | |
|---|---|
| Alcohol, 95% pure | |
| Wax, clay, pitch, etc. | |
| Water | |
| Bottle, narrow mouth (wine or coke) | |
| Bottles , wide mouth (mason jars) | |
| Tubing (rubber, copper, steel) to fit narrow mouth bottle | |
| Teaspoon | |
| Improvised scale | Section 7.8 |
| Heat source | |
| Paper towel | |
| Pan | |
| Tape | |
| Cup | |

Procedure

1--Measure 1/3 teaspoon (2-1/2 grams) of sodium chlorate into a wide mouth bottle. Add 10 teaspoons of alcohol.

2--Place the wide mouth bottle in a pan of hot water. Add 1 teaspoon (4 grams) of copper sulfate to the mixture. Heat for a period of 30 minutes just under the boiling point and stir occasionally.

**Caution:** Keep solution away from flame.

Note: Keep volume of solution constant by adding additional alcohol approximately every 10 minutes.

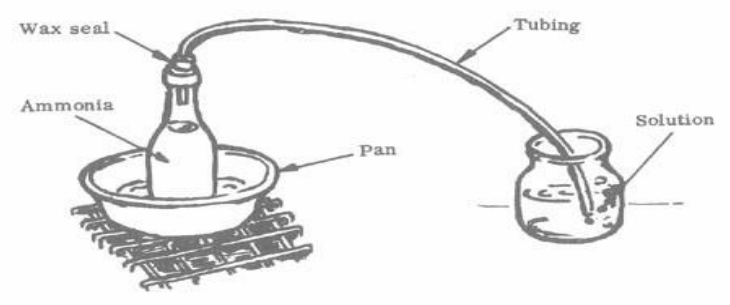
3--Remove solution from pan and allow to cool. Color of solution will change from blue to light green. Filter solution through a paper towel into another wide mouth bottle. Store solution until ready for step 6.

4--Add 1 cup (250 milliliters) of ammonia to the narrow mouth bottle.

5--Place tubing into the neck of bottle so that it extends about 1-1/2 inches (4 cm) inside bottle. Seal tubing to bottle with wax, clay, pitch, etc.

6--Place free end of tubing into the chlorate-alcohol-sulfate solution (step 3). Heat bottle containing ammonia in a pan of hot water, but not boiling, for approximately 10 minutes.

7--Bubble ammonia gas through the chlorate-alcohol-sulfate solution, approximately 10 minutes, until the color changes from light green to dark blue. Continue bubbling for another 10 minutes.

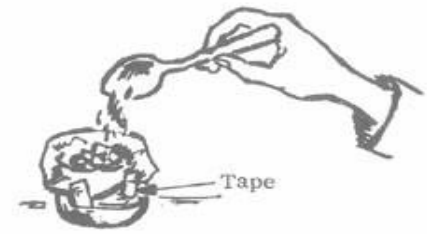



**Caution:** At this point the solution is a primary explosive. Keep away from flame.

8--Remove the solution from the pan and reduce the volume to about 1/3 of its original volume by evaporating in the open air or in a stream of air.

Note: Pour solution into a flat container for faster evaporation.

9--Filter the solution through a paper towel into a wide mouth bottle to collect crystals. Wash crystals with 1 teaspoon of alcohol. Tape and set aside to dry (approximately 16 hours).




Note: The drying time can be reduced to 2 hours if a hot (not boiling) water bath is used.

**Caution:** Explosive is shock and flame sensitive. Store in a capped container.

**1.17 HMTD**

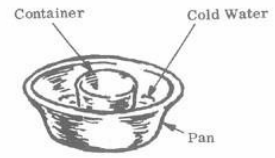
HMTD is a primary explosive that can be made from hexamethylenetetramine, hydrogen peroxide and citric acid. This explosive is to be used with a booster explosive such as picric acid (section 1.21) or RDX (section 1.15) in the fabrication of detonators (section 6.13).

| Materials Required | Source |
|---|---|
| Hexamethylenetetramine | Drugstores under names of urotropine, hexamin, methenamine, etc. Army heat tablets |
| Hydrogen peroxide | 6% hair bleach (or stronger if possible ) |
| Citric acid | Drug stores or food stores (“Sour Salt”) |
| Containers, bottles or glasses | |
| Paper towels | |
| Teaspoon | |
| Pan | |
| Water | |
| Tape | |

Procedure

1--Measure 9 teaspoons of hydrogen peroxide into a container.

2--In 3 portions, dissolve 2-1/2 teaspoons of crushed hexamethylenetetramine in the peroxide.




3--Keep the solution cool for 30 minutes by placing container in a pan of cold water.

4--In 5 portions, dissolve 4-1/2 teaspoons of crushed citric acid in the hexamethylenetetramine-peroxide solution.

5--Permit solution to stand at room temperature until solid particles form at the bottom of container.

Note: Complete precipitation will take place in 8 to 24 hours.

6--Filter the mixture through a paper towel into a container to collect the solid particles.

**Caution:** At this point the mixture is a primary explosive. Keep away from flame.

Wash the solid particles collected in the paper towel with 6 teaspoons of water by pouring the water over them. Discard the liquid in the container.

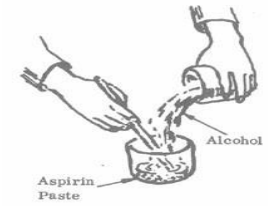
Place these explosive particles in a container and allow to dry.

Caution: Handle dry explosive with great care. Do not scrape or handle it roughly. Keep away from sparks or open flames. Store in cool, dry place.

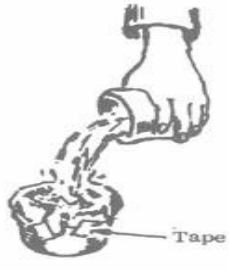
### 1.21 Preparation of Picric Acid from Aspirin

Picric acid can be used as a booster explosive in detonators (section 6.13), a high explosive charge, or as an intermediate to preparing lead picrate (section 1.20) or DDNP (section 1.19) *(Zine makers' note: sections 1.19 and 1.20 were overly complicated and redundant, so we removed them to optimize the zine.)*

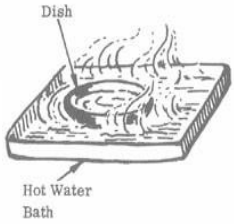
| Materials Required |
|---|
| Aspirin tablets (5 grains or 325 mg per tablet) |
| Alcohol, 95% pure |
| Sulfuric acid, concentrated, (battery acid – boil until white fumes appear) |
| Potassium nitrate (section 1.2) |
| Water |
| Paper towels |
| Canning jar, 1 pint |




| |
|---|
| Rod (glass or wood) |
| Glass containers |
| Ceramic or glass dish |
| Cup |
| Teaspoon |
| Tablespoon |
| Pan |
| Heat Source |
| Tape |




Procedure




1--Crush 20 aspirin tablets in a glass container. Add 1 teaspoon of water and work into a paste.

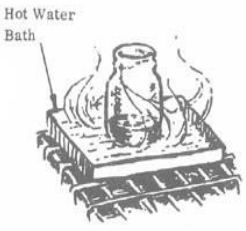
2--Add approximately 1/3 to 1/2 cup of alcohol (100 milliliters) to the aspirin paste; stir while pouring.

3--Filter the alcohol-aspirin solution through a paper towel into another glass container. Discard the solid left on the paper towel.

4--Pour the filtered solution into a ceramic or glass dish.

5--Evaporate the alcohol and water from the solution by placing the dish into a pan of hot water. White powder will remain in the dish after evaporation.

Note: Water in pan should be at hot bath temperature, not boiling, approximately 160° to 180°F. It should not burn the hands.




6--Pour 1/3 cup (80 milliliters) of concentrated sulfuric acid into a canning jar. Add the white powder to the sulfuric acid.

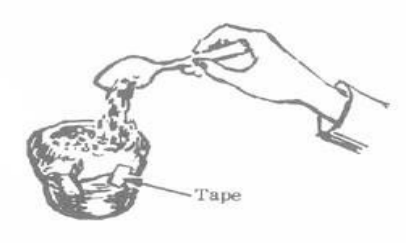
7--Heat canning jar of sulfuric acid in a pan of simmering hot water bath for 15 minutes; then remove jar from the bath. Solution will turn to a yellow-orange color.

8--Add 3 level teaspoons (15 grams) of potassium nitrate in three portions to the yellow-orange solution; stir vigorously during additions. Solution will turn red, and then back to a yellow-orange color.

9--Allow the solution to cool to ambient or room temperature while stirring occasionally.

10--Slowly pour the solution, while stirring, into 1-1/4 cup (300 milliliters) of cold water and allow to cool.

11--Filter the solution through a paper towel into a glass container. Light yellow particles will collect on the paper towel.




12--Wash the light yellow particles with 2 tablespoons (25 milliliters) of water. Discard the waste liquid in the container.

13--Place particles in ceramic dish and set in a hot water bath, as in step 5, for 2 hours.

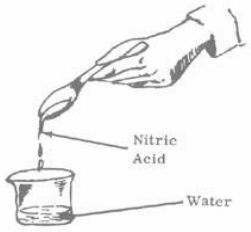
### 1.22 Double Salts

Double salts is used as a primary explosive in the fabrication of detonators (section 6.13). It can be made in the field from silver (coins), nitric acid, calcium carbide, and water.

| Materials Required |
|---|
| Nitric acid (90% concentration) ( section 1.4) |
| Silver metal (silver coin, about 5/8 inch diameter) |
| Calcium carbide (acetylene or calcium carbide lamps) |
| Rubber and glass tubing (approximately 1/4 inch inside diameter) |
| Paper towels |
| Heat-resistant bottles or ceramic jugs, 1 to 2 quart capacity, and one cork to fit. (Punch hole in cork to fit tubing.) |
| Teaspoon (aluminum, stainless steel or wax-coated) or equivalent measure |
| Glass container |
| Heat source |
| Long narrow jar (olive jar) |
| Tape |
| Water |
| Alcohol |

Procedure

Dilute 2-1/4 teaspoons of nitric acid with 1-1/2 teaspoons of water in a glass container by adding the acid to the water.



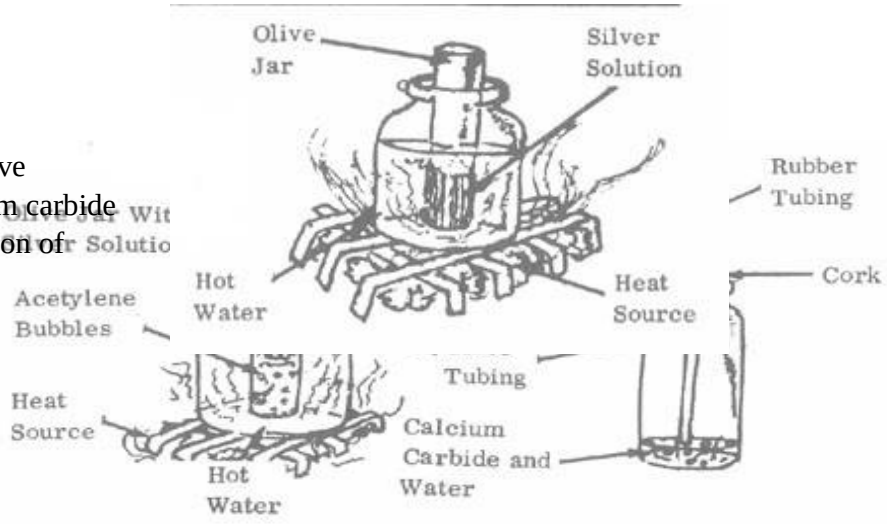

Dissolve a silver coin (a silver dime) in the diluted nitric acid. The solution will turn to a green color.

Note: It may be necessary to warm the container to completely dissolve the silver coin.

> **Caution:** Acid will burn skin and destroy clothing. If any is spilled, wash it away with a large quantity of water. Do not inhale fumes.

3. Pour solution into a long narrow (olive) jar and place it in a bottle of hot water. Crystals will form in the solution; heat until crystals dissolve.

While still heating and after crystals have dissolved, place 10 teaspoons of calcium carbide in another glass bottle and add 1 teaspoon of water.




After the reaction has started add another teaspoon of water. Then set up as shown.

Bubble acetylene through the solution for 5 to 8 minutes. A brown vapor will be given off and white flakes will appear in the silver solution.

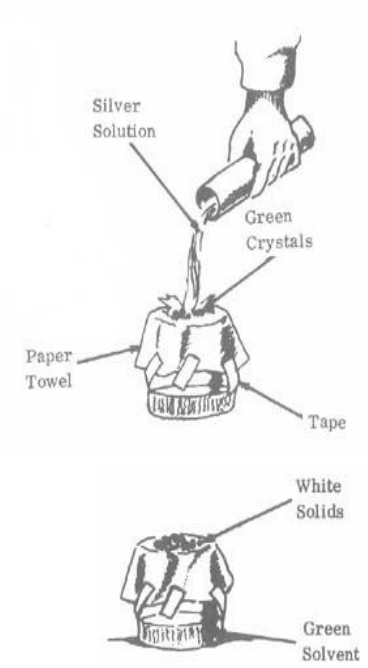
Remove the silver solution from the heat source and allow it to cool. Filter the solution through a paper towel into a glass container. Green crystals will collect on the paper.

Wash the solids collected on the paper towel with 12 teaspoons of alcohol. The solid material will turn white while the solvent in the container will have a green color.

Place the white solid material on a clean paper towel to air dry.

| Caution: Handle dry explosive with great care. Do not scrape or handle it roughly. Keep away from sparks or open flames. |
|---|

Store in cool, dry place.



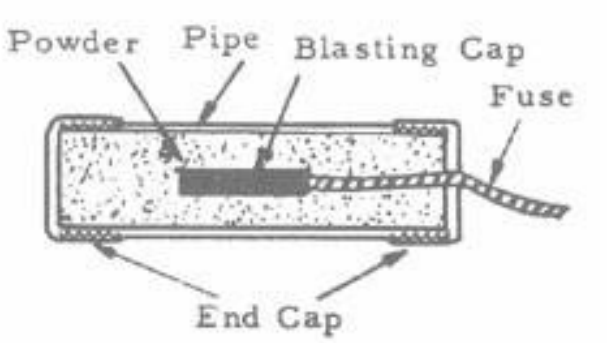
## Section 2

Mines and Grenades

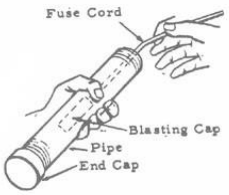
### 2.1 Pipe Hand Grenade

Hand grenades can be made from a piece of iron pipe. The filler can be plastic or granular military explosive, improvised explosive, or propellant from shotgun or small arms ammunition.

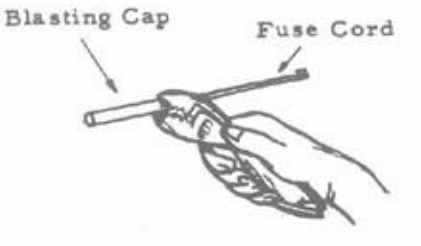
| Materials Required |
|---|
| Iron pipe, threaded ends, 1-1/2 inch to 3 inches diameter, 3 inches to 8 inches long |
| Two (2) iron pipe caps |
| Explosive or propellant |
| Nonelectric blasting cap (commercial or military) |
| Fuse cord |
| Hand drill |
| Pliers |



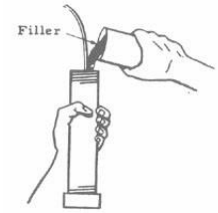

Procedure



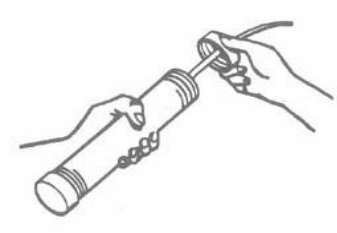

1. Place blasting cap on one end of fuse cord and crimp with pliers.

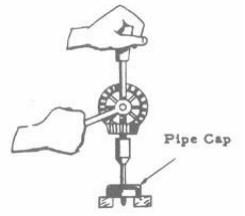



Note: To find out how long the fuse cord should be, check the time it takes a known length to burn. If 12 inches burns in 30 seconds, a 6-inch cord will ignite the grenade in 15 seconds.




Screw pipe cap to one and of pipe. Place fuse cord with blasting cap into the opposite end so that the blasting cap in near the center of the pipe. Note: If plastic explosive is to be used, fill pipe before inserting blasting cap. Push a round stick into the center of the explosive to make a hole and then insert the blasting cap. Pour explosive or propellant into pipe a little bit at a time. Tap the base of the pipe frequently to settle filler.





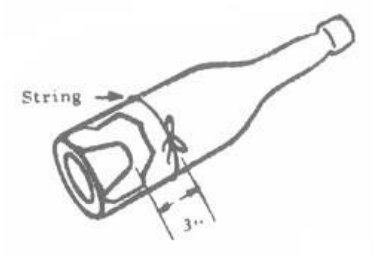

Drill a hole in the center of the unassembled pipe cap large enough for the fume cord to pass through.

Wipe pipe threads to remove any filler material. Slide the drilled pipe cap over the fuse and screw hand tight onto the pipe.

**2.3 Wine Bottle Cone Charge**

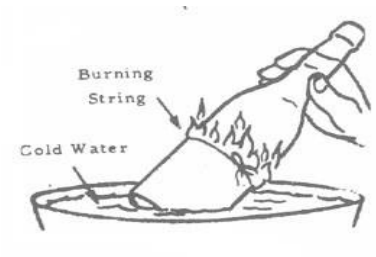
This cone charge will penetrate 3 to 4 inches of armor. Placed on an engine or engine compartment it will disable a tank or other vehicle.

| Materials Required |
|---|
| Glass wine bottle with false bottom (cone shaped) |
| Plastic or castable explosive |
| Blasting cap |
| Gasoline or kerosene (small amount) |
| String |
| Adhesive tape |




Procedure

1. Soak a piece of string in gasoline or kerosene. Double wrap this string around the wine bottle approximately 3 inches (7-1/2 cm) above the top of the cone.




Note: A small amount of motor oil added to the gasoline or kerosene will improve results.

Ignite the string and allow to burn for 2 minutes. Then plunge the bottle into cold water to crack the bottle. The top half can now be easily removed and discarded.

If plastic explosive is used:

Pack explosive into the bottle a little at a time compressing with a wooden rod. Fill the bottle to the top.

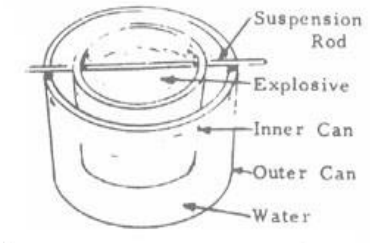
Press a 1/4 inch wooden dowel 1/2 inch (12 mm) into the middle of the top of the explosive charge to form a hole for the blasting cap.

If TNT or other castable explosive is used:

Break explosive into small pieces using a wooden mallet or nonsparking metal tools. Place pieces in a tin can.

b. Suspend this can in a larger container which is partly filled with water. A stiff wire or stick pushed through the smaller can will accomplish this.

| Caution: The inner can must not rest on the bottom of the outer container. |
|---|



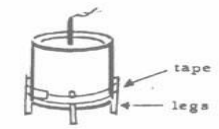

c. Heat the container on an electric hot plate or other heat source. Stir the explosive frequently with a wooden stick while it is melting.

| Caution: Keep area well ventilated while melting explosive. Fumes may be poisonous. |
|---|

When all the explosive has melted, remove the inner container and stir the molten explosive until it begins to thicken. During this time the bottom half of the wine bottle should be placed in the container of hot water. This will preheat the bottle so that it will not crack when the explosive is poured.

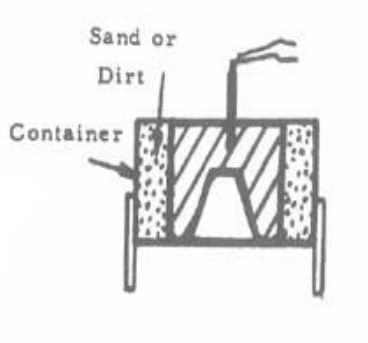
Remove the bottle from hot water and dry thoroughly. Pour molten explosive into the bottle and allow to cool. The crust which forms on top of the charge during cooling should be broken with a wooden stick and more explosive added. Do this as often as necessary until the bottle is filled to the top.

When explosive has completely hardened, bore a hole for the blasting cap in the middle of the top of the charge about 1/2 inch (12 mm) deep.




How to Use

Place blasting cap in the hole in the top of the charge. If non-electric cap is used be sure cap is crimped around fuze and fuze is long enough to provide safe delay.




Place the charge so that the bottom is 3 to 4 inches (7-1/2 to 10cm) from the target. This can be done by taping legs to the charge or any other convenient means as long as there is nothing between the base of the charge and the target.

If electric cap is used, connect blasting cap wires to firing circuit.

Note: The effectiveness of this charge can be increased by placing it inside a can, box, or similar container and packing sand or dirt between the charge and the container.

### 5.6 Improvised White Flare

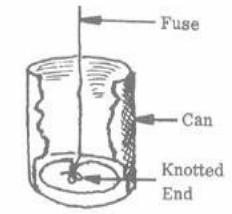
An improvised white flare can be made from potassium nitrate, aluminum powder and shellac. It has a time duration of approximately 2 minutes.

| Materials Required | Source |
|---|---|
| Potassium nitrate | Field grade (section 1.2) Drug Store |
| Aluminum powder (bronzing) | Hardware or paint store |
| Shellac | Hardware or paint store |
| Quart jar with lid | |
| Fuse, 15 inches long | |
| Wooden rod, 1/4 inch diameter | |
| Tin can, 2-1/2 inch diameter x 5 inches long | |
| Flat window screen | |
| Wooden block | |

Note: All of the above dimensions are approximate.

Procedure

1 Place the potassium nitrate crystals onthe screen. Rub the material back and forth against the screen mesh with the wooden block until the nitrate is granulated into a powder.

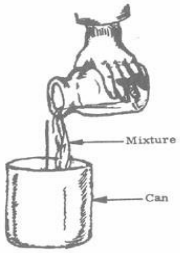



2 Measure 21 tablespoons of the powderednitrate into a quart jar. Add 21 tablespoons of the aluminum powder to the nitrate.

3 Place lid on the jar and shake ingredients vigorously until well mixed.

4 Add 12 tablespoons of shellac to the mixture and stir with the wooden rod. Store mixture until ready for step 7.

5 Knot one end of the fuse.




6 Wrap the knotted end of the fuse once around the inside bottom of the can with the knot at the center. Then, run the rest of the fuse out the center top of the can.

7. Pour the mixture in the can and around the fuse.

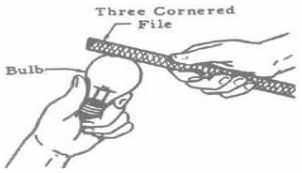
Store flare mixture away from heat and flame until ready for use, but no longer than 3 weeks.

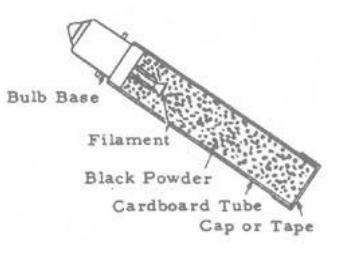
# Section 6

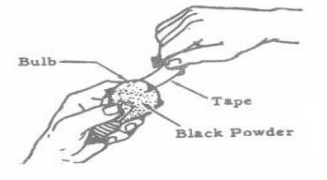
**Fuses, Detonators & Delay Mechanisms**

## 6.1 Electric Bulb Initiator

Mortars, mines and similar weapons often make use of electric initiators. An electric initiator can be made using a flash light or automobile electric light bulb.




| Materials Required |
|---|
| Electric light bulb and mating socket |
| Cardboard or heavy paper |
| Black powder |
| Adhesive tape |

Procedure - Method I

Break the glass of the electric light bulb. Take carenot to damage the filament. The initiator will not work if the filament is broken. Remove all glass above the base of the bulb.

Form a tube 3 to 4 inches long from cardboard or heavypaper to fit around the base of the bulb. Join the tube with adhesive tape.

Fit the tube to the bulb base and tape in place.

Make sure that the tube does not cover that portion of the bulb base that fits into the socket.

If no socket is available for connecting theinitiator to the firing circuit, solder the connecting wires to the bulb base.

**Caution**: Do not use a hot soldering iron on the completed igniter since it may ignite the black powder.

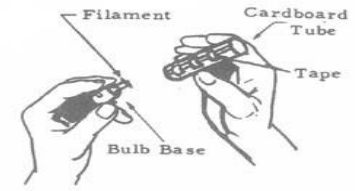
Fill the tube with black powder and tape the open end of the tube closed.

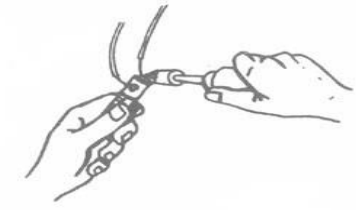
Procedure - Method II

If the glass bulb (electric light) is large enough to hold the black powder, it can be used as the container.

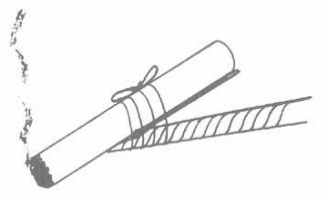
File a small hole in the top of the bulb.

Fill the bulb with black powder and tape the hole closed.



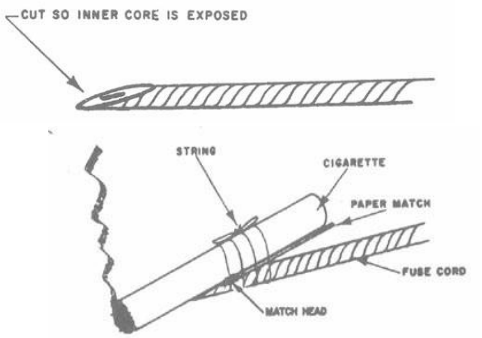



### 6.3 Delay Igniter from Cigarette



A simple and economical time delay can be made with a common cigarette.

| Materials required |
|---|
| Cigarette |
| Paper match |
| String (shoelace or similar cord) |
| Fuse cord (improvised or commercial) |

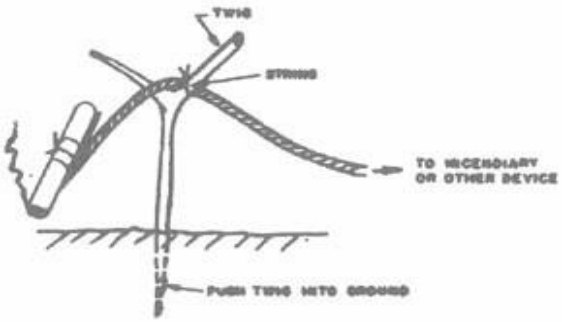



Procedure

Cut end of fuse cord to expose inner core.

Light cigarette in normal fashion. Place a paper match so that the head is over exposed end of fuse cord and tie both to the side of the burning cigarette with string.

Position the burning cigarette with fuse so that it burns freely. A suggested method is to hang the delay on a twig.




Note: Common dry cigarettes burn about 1 inch every 7 or 8 minutes in still air. If the fuse cord is placed 1 inch from the burning end of a cigarette a time delay of 7 or 8 minutes will result.

Delay time will vary depending upon type of cigarette, wind, moisture, and other atmospheric conditions.

To obtain accurate delay time, a test run should be made under the conditions it will be used in.

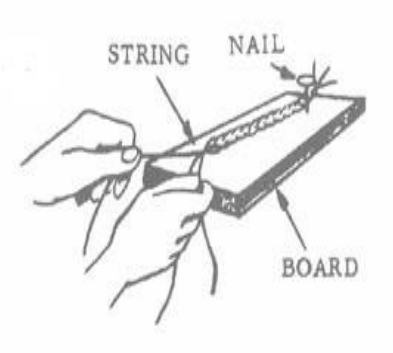
## 6.7 Fuse Cords

These fuse cords are used for igniting propellants and incendiaries or, with a nonelectric blasting cap, to detonate explosives.

### 6.7.1 Fuse Cords — Fast Burning Fuse

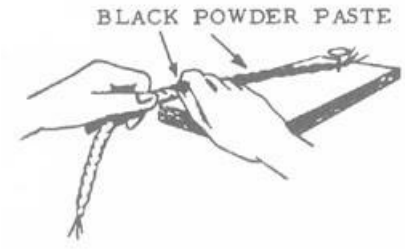
The burning rate of this fuse is approximately 40 inches (100 cm) per minute.

| Materials Required | | |
|---|---|---|
| Soft cotton string | | |
| Fine black powder | **or** | Potassium nitrate (saltpeter) 25 parts<br>Charcoal 3 parts<br>Sulfur 2 parts |
| Piece of round stick | | |
| Two pans or dishes | | |




Procedure

Moisten fine black powder to form a paste or prepare a substitute as follows:




Dissolve potassium nitrate in an equal amount of water.

Pulverize charcoal by spreading thinly on a hard surface and rolling the round stick over it to crush to a fine powder.

Pulverize sulfur in the same manner.

Dry mix sulfur and charcoal.

Add potassium nitrate solution to the dry mix to obtain a thoroughly wet paste.

Twist or braid three strands of cotton string together.

Rub paste mixture into twisted string withfingers and allow to dry.

Check actual burning rate of fuse by measuring the time it takes for a known length to burn. This isused to determine the length needed for a desired delay time. If 5 inches (12-1/2 cm) burns for 6 seconds, 50 inches (125 cm) of fuse cord will be needed to obtain a one minute (60 second) delay time.

### 6.13 Detonator

Detonators (blasting caps) can be made from a used small arms cartridge case and field manufactured explosives. Detonators are used to initiate secondary high explosives (C4, TNT, etc.).

| Materials Required | Notes |
|---|---|
| Primary explosive | See table |
| Booster explosive | RDX, or picric acid (section 1.21) |

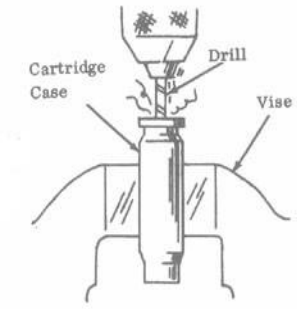
| | |
|---|---|
| Scale | |
| Used cartridge case | Larger than .22 |
| Fuse, 12 inches long | |
| Round wooden stick (small enough just to fit in the neck of the cartridge case) | |
| Drill or knife | |
| Long nail with sharpened end | |
| Vise | |
| Improvised loading fixture | |

Procedure

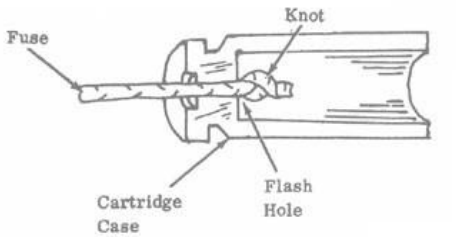
1.--Remove fired primer from a used cartridge case using a sharpened nail. (See section 3.5.)

2.--If necessary, open out flash hole in the primer pocket using a drill or knife. Make it large enough to receive fuse.

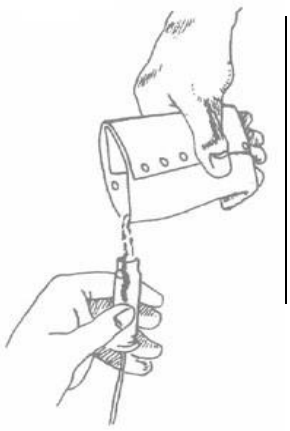
3.--Place one end of fuse in the flash hole and extend it through the case until it becomes exposed at theopen end. Knot this end and then pull fuse in cartridge case thus preventing fuse from falling out.



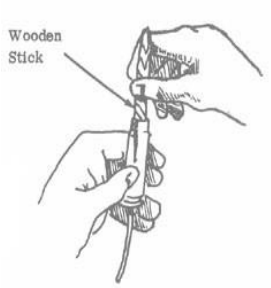

4.-- Load the primary explosive in the cartridge case, using the following table for the proper amount.




| Primary Explosive | Primary Explosive Source | Minimum |
|---|---|---|
| TACC (tetramminecopper chlorate) | Section 1.16 | 1 gram |
| HMTD | Section 1.17 | 0.75 gram |
| Double salts | Section 1.22 | 0.75 gram |

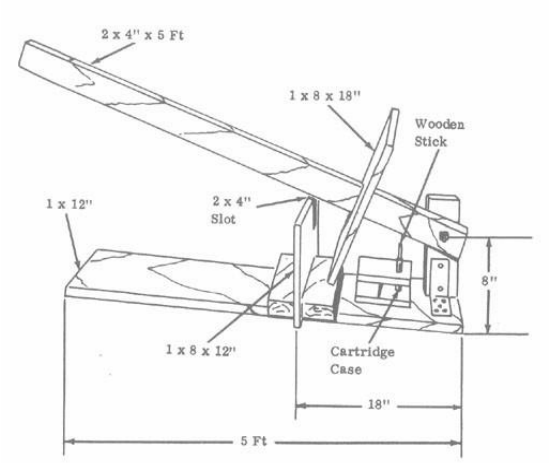


*See section 7.8 for details on improvised scale.




**.22 caliber cartridge case cannot be used with lead picrate as there is not enough volume to contain the explosive train.

5--Compress the primary explosive into the cartridge case with the wooden stick and the following improvised loading fixture.




Caution: The primary explosive is shock and flame sensitive.

**Note:** Tamping is not needed when TACC is used.

6--Add one gram of booster explosive. The booster can be RDX, or picric acid (section 1.21).

7--Compress the booster explosive into the cartridge case with wooden stick and the loading fixture.

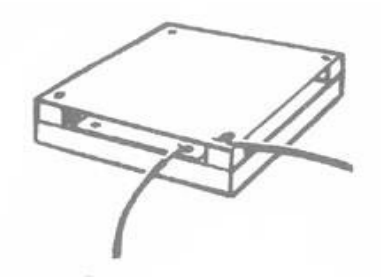
8--If the case is not full, fill the remainder with the secondary explosive to be detonated.

**Caution:** Detonator has considerably more power than a military blasting cap and should be handled carefully.

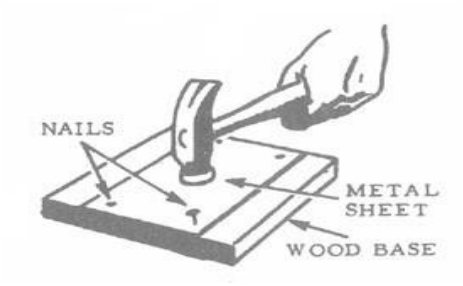
**Section 7 Miscellaneous**

**7.3 Flexible Plate Switch *(Pressure Plate)***

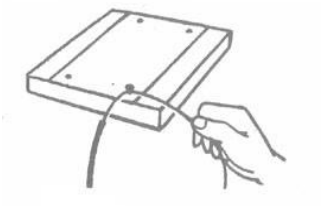
This pressure sensitive switch is used for initiating emplaced mines and explosives.



| Materials Required |
|---|
| Two flexible metal sheets: one approximately 10 inches (25 cm) square one approximately 10 inches x 8 inches (20 cm) Piece of wood 10 inches square by 1 inch thick |
| Four soft wood blocks 1 inch x 1 inch x 1/4 inch |
| Eight flat head nails, 1 inch long |
| Connecting wires |
| Adhesive tape |

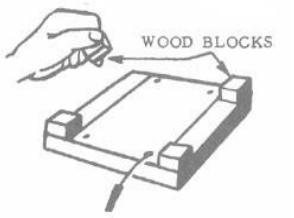



Procedure



1. Nail 10 inch x 8 inch metal sheet to 10 inches square piece of wood so that 1 inch of wood shows on each side of metal. Leave one of the nails sticking up about 1/4 inch.

Strip insulation from the end of one connecting wire. Wrap this end around the nail and drive the nail all the way in.



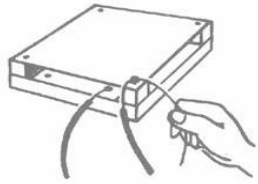

Place the four wood blocks on the corners of thewood base.

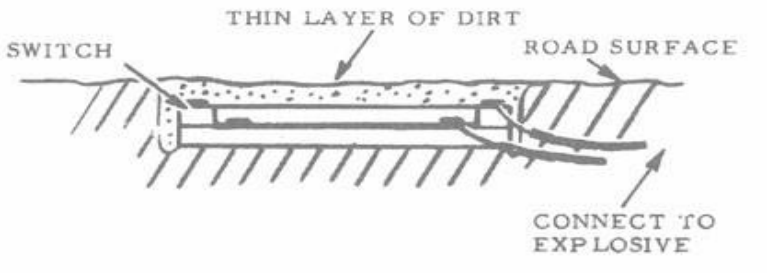
Place the 10 inch square flexible metal sheet sothat it rests on the blocks in line with the wood base.

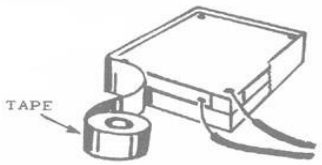
Drive four nails through the metal sheet and theblocks to fasten to the wood base. A second connecting wire is attached to one of the nails as in step 2.

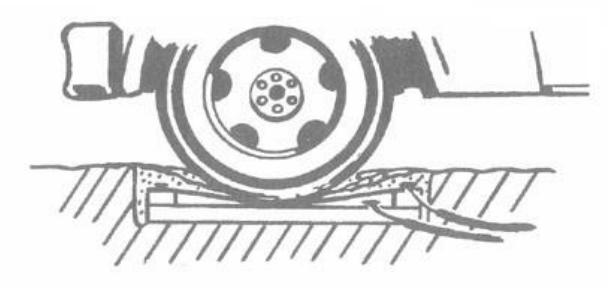
Wrap adhesive tape around the edges ofthe plate and wood base. This will assure that no dirt or other foreign matter will get between the plates and prevent the switch from operating.

How to Use: The switch is placed in a hole in the path of expected traffic and covered with a thin layer of dirt or other camouflaging material. The mine or other explosive device connected to the switch can be buried with the switch or emplaced elsewhere as desired.



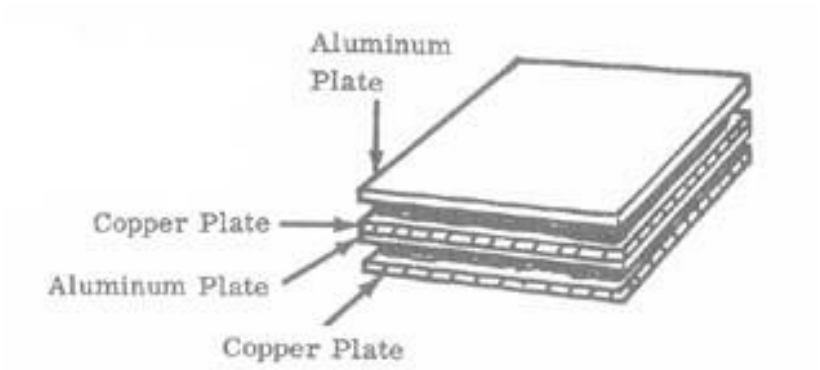


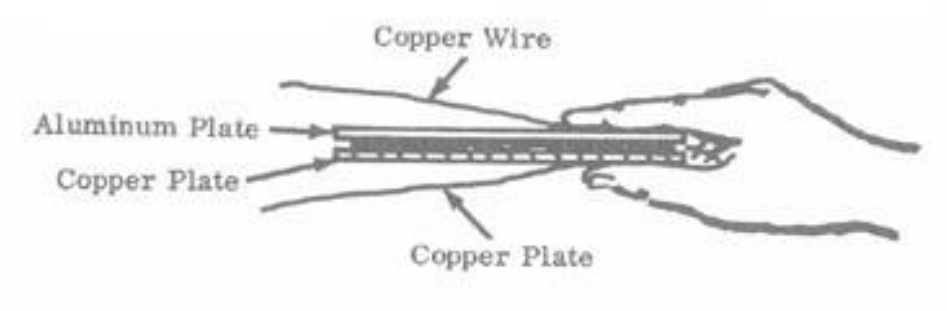


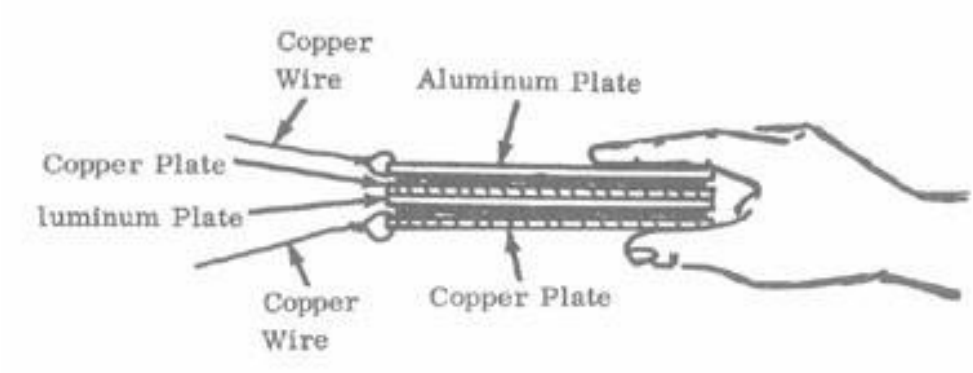
When a vehicle passes over the switch, the two metal plates make contact closing the firing circuit

If more than one cell is used, placethe cells on top of each other so that unlike metal plates are touching.




When ready to fire, clean plates with knife where connections are to be made. Connect one wire to theouter aluminum plate. This may be done by holding the wires against the plates or by hooking them through holes punched through plates. If wires are hooked through plates, be sure they do not touch mixture between plates.



**7.14 Armor Materials**

The following table shows the amount of indigenous materials needed to stop ball type projectiles of the 5.56 mm, .30 caliber, and .50 caliber ammunition fired from their respective weapons at a distance of 10 feet (3 m).

| Indigenous Material | Thickness of Materials | | | | | |
|---|---|---|---|---|---|---|
| | Inches | | | Centimeters | | |
| | 5.56 mm | .30 caliber 7.62 mm | .50 caliber 12.70 mm | 5.56 mm | .30 caliber 7.62 mm | .50 caliber 12.70 mm |
| Mild steel (structural) | 1/2 | 1/2 | 3/4 | 1-1/4 | 1-1/4 | 2 |
| Mild aluminum (structural) | 1 | 1 | 2 | 2-1/2 | 2-1/2 | 5 |
| Pine wood (soft) | 14 | 22 | 32 | 36 | 56 | 82 |
| Broken stones (cobble gravel) | 3 | 4 | 11 | 8 | 11 | 28 |
| Dry sand | 4 | 5 | 14 | 11 | 13 | 36 |
| Wet sand or earth | 6 | 13 | 21 | 16 | 33 | 54 |

Note: After many projectiles are fired into the armor, the armor will break down. More material must be added.

**Appendix - Secondary High Explosives**

A2.13 Ammonium Nitrate

Description

Ammonium nitrate is a white crystalline substance that is extremely water absorbent and is therefore usually packed in a sealed metal container. It has a low velocity of detonation (3600 feet per second or 1100 meters per second) and is used primarily as an additive in other explosive compounds. When it is used alone, it must be initiated by a powerful booster or primer. It is only 55% as powerful as TNT, hence larger quantities are required to produce similar results.

Comments

This material was tested. It is effective.

Caution: Never use copper or brass containers because ammonium nitrate reacts with these metals.

References

TM 9-1900, Ammunition, General, page 264.

TM 9-1910, Military Explosives, page 119.